SPECIFICATION

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SPEC. NO.: PS-30280-XXXXX-XXX **REVISION:** A

PRODUCT NAME: HDMI2.1 TYPE A RECEPTACLE CONNECTOR

PRODUCT NO: 30279、30280 SERIES

PREPARED:	CHECKED:	APPROVED:
LIAO WAN TING	**TENG CHANG HO**	**KUO JUNG HSUN**
DATE: **2022.02.14**	DATE: **2022.02.14**	DATE: **2022.02.14**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-006427	NEW SPEC	LIAO WAN TING	2022.02.14

2 SCOPE

This specification covers performance, tests and quality requirements for HDMI2.1 type A receptacle connector.

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

4.1.1 Connector shall be of the design, construction and physical dimensions specified on the applicable sales drawing.
4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

4.2.1 Contact: High performance copper alloy
Finish: Pls. refer to the drawing.
4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0
4.2.3 Shell: refer to the drawing.
Finish: Pls. refer to the drawing.

4.3 Ratings

4.3.1 Working voltage less than 36 volts (per pin)
4.3.2 Voltage: 40 V AC (per pin)
4.3.3 Current: 0.5 Amperes (per pin)
4.3.4 Operating Temperature : -40℃ to +85℃

5 Performance

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	**Requirement**	**Standard**
Low Level Contact Resistance (Contact and Shell)	Initial: Contact resistance excluding conductor resistance: 10 milliohms maximum. After test: Contact : Change from initial value: 30 milliohms maximum. Shell Part : Change from initial value: 50 milliohms maximum..	Mated connectors, Contact: measure by dry circuit, 20 mVolts maximum, 10mA. Shell: measured by open circuit, 5 Volts maximum, 100mA. (EIA-364-23)
Insulation Resistance	Unmated Connectors: 100 megaohms Min.	Unmated connectors, apply 500 Volts DC between adjacent terminal or ground. (EIA 364-21)
	Mated Connectors: 10 megaohms Min	Mated connectors, apply 150 Volts DC between adjacent terminal or ground. (EIA 364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 2 mA max.	At sea level for 1 minute. Unmated connectors, apply 500 Volts AC (rms.) between Adjacent terminal or ground. Mated connector, apply 300 Volts AC (rms.) between adjacent terminal and ground. (EIA 364-20)
Temperature Rise	85 °C, Max. temperature change 30℃ Max. change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. 55 °C, Max. ambient. (EIA-364-70 METHOD 1,CONDITION 1)

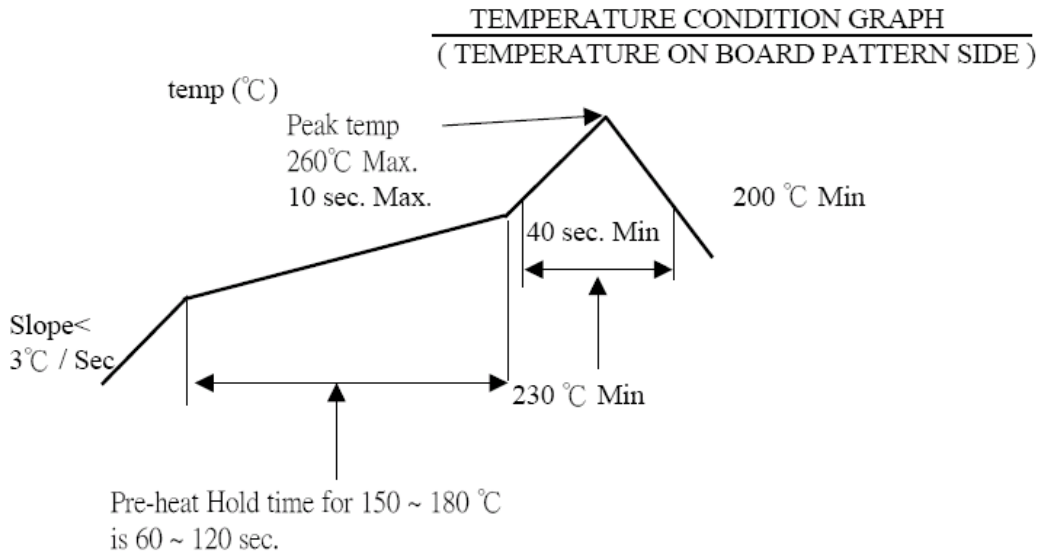
Mated Connector Differential Impedance	100 ohms±10% A single excursion is permitted out to a max/min of 100 ohms±15% and of duration less than 150 ps	Rise time : 75 ps Max. (10%-90%). Differential Measurement Specimen Environment Impedance = 100 ohms differential. Plug and receptacle connectors mounted on a controlled impedance PCB for micro-probing. EIA-364-108
Mated Connector Attenuation (Differential Insertion Loss)	-0.3dB Min. @ 0 GHz -1.0dB Min. @ 2 GHz -1.5dB Min. @ 3 GHz -3.0dB Min. @ 6 GHz -6.0dB Min. @ 12 GHz	Differential Measurement Specimen Environment Impedance = 100 ohms differential. Source-side receptacle connector mounted on a controlled impedance PCB fixture. EIA-364-101
Mated Connector Attenuation (Differential Insertion Loss) to Crosstalk Ratio (ACR)	-35dB Max. @ 0≦f<1 GHz -25dB Max. @ 1≦f<4 GHz -15dB Max. @ 4≦f<7 GHz -10dB Max. @ 7≦f<12 GHz	Differential Measurement Specimen Environment Impedance = 100 ohms differential. Source-side receptacle connector mounted on a controlled impedance PCB fixture. Driven pair and victim pair. EIA-364-90
MECHANICAL		
Item	**Requirement**	**Standard**
Durability	10000 cycles.	Measure contact and shell resistance after Following. Automatic cycling: 10,000 cycles at 100±50 cycles per hour
Insertion/Withdrawal Force	Insertion Force: 44.1N {4.5kgf} maximum Withdrawal Force: 9.8N {1.0kgf} minimum 39.2N {4.0kgf} maximum	Insertion and withdrawal speed : 25mm/minute. (EIA-364-13)
Contact Retention Force (FOR ASSEMBLED TYPE ONLY)	0.5kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with tester.

Vibration	1 μs Max.	Amplitude : 1.52mm P-P or 147m/s2 {15G} Sweep time: 50-2000-50Hz in 20 minutes. Duration : 12 times in each (total of 36 Times) X, Y, Z axes. Electrical load : DC100mA current shall be flowed during the test. (EIA-364-28 Condition III)
Shock (Mechanical)	1 μs Max.	Pulse width: 11 msec., Waveform : half sine, 490m/s2{50G}, 3 strokes in each X.Y.Z. axes (EIA-364-27, Condition A)
ENVIRONMENTAL		
Item	**Requirement**	**Standard**
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 10 **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -55 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mate/unmate connectors together and perform the test as No Damage follows. Temperature : +25°C to +85°C Relative Humidity : 80% to 95% Duration : 4 cycles (96 hours) Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24 hours, after which the specified measurements shall be performed. (EIA-364-31)
Thermal Aging	See product Qualification and test sequence group 5	Mate connectors and expose to 105 ± 2°C for 250 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements

		shall be performed. (EIA-364-17)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (I) Gold flash for 8 hours (II) Gold plating 5 u" for 24 hours. (III) Gold plating 15u"~30u" for 48 hours. (EIA-364-26)
Solder ability	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245±5°C, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	T≧350℃, 3sec at least.

Note. Flowing Mixed Gas shell be conduct by customer request.

6 INFRARED REFLOW CONDITION



7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group										
	1	2	3	4	5	6	7	8	9	10	
	Test Sequence										
Examination of Product	1,3			1,7	1,6	1,4			1,4		
Low Level Contact Resistance (Contact and Shell)		1,5	1,4	2,10	2,9	2,5			2,5		
Insulation Resistance				3,9	3,8						
Dielectric Withstanding Voltage				4,8	4,7						
Temperature Rise	2										
Insertion/Withdrawal Forces		2,4									
Contact Retention Force (FOR ASSEMBLED TYPE ONLY)								1			
Durability		3									
Vibration			2								
Shock(Mechanical)			3								
Resistance to Soldering Heat									3		
Thermal Shock				5							
Humidity				6							
Thermal Aging					5						
Salt Spray(Only For Gold Plating)						3					
Solder ability							1				
Hand Soldering Temperature Resistance										1	
Sample Size	2	4	4	4	4	4	2	4	4	4	

HDMI2.1 TYPE A Category 3 Pin Assignment:

HDMI2.1 Type A Category 3 Pin Assignment vs. HDMI1.4/2.0 Category 1, 2 comparison

Pin	Category 1, 2 Pin assignment	Category 3 Pin Assignment
1	TMDS Data2+	Data2+
2	TMDS Data2 Shield	Data2 Shield
3	TMDS Data2-	Data2-
4	TMDS Data1+	Data1+
5	TMDS Data1 Shield	Data1 Shield
6	TMDS Data1-	Data1-
7	TMDS Data0+	Data0+
8	TMDS Data0 Shield	Data0 Shield
9	TMDS Data0-	Data0-
10	TMDS Clock+	Data3+

Pin	Category 1, 2 Pin assignment	Category 3 Pin Assignment
11	TMDS Clock Shield	Data3 Shield
12	TMDS Clock-	Data3-
13	CEC	CEC
14	Utility	Utility
15	SCL	SCL
16	SDA	SDA
17	DDC/CEC Ground	DDC/CEC Ground
18	+5V Power	+5V Power
19	Hot Plug Detect	Hot Plug Detect